WHAT IS CLAIMED IS:

1. A method of producing RNA replicates of sample nucleic acids, the method comprising:

providing an insoluble support comprising attached oligonucleotides, wherein (1) the attached oligonucleotides comprise a promoter sequence and a target annealing sequence, wherein the target annealing sequence comprises a poly-thymidine tract and a 3' terminal A, G, or C, and (2) the proximal end of the promoter sequence is spaced from the insoluble support by a distance greater than 10 nm,

annealing sample nucleic acids to the attached oligonucleotides;

constructing template nucleic acids by extending the attached oligonucleotides using a polymerase; and

transcribing the template nucleic acids to produce RNA replicates of the sample nucleic acids.

2. The method of claim 1 wherein the distance is between 10 to 150 nm.

3. The method of claim 2 wherein the distance is between 10 and 50 nm.

4. The method of claim 1 wherein the attached oligonucleotides each comprise a biotin moiety at the 5' terminus, are attached to the insoluble support by a biotin / biotin-binding protein interaction, and the proximal end of the promoter is between 5 and 30 nucleotides from the 5' terminus.

5. The method of claim 4 wherein the proximal end of the promoter is between 6 and 18 nucleotides from the 5' terminus.

6. The method of claim 1 wherein the attached oligonucleotides are attached to the insoluble support by a polyethylene glycol linker which has between 8 and 16 units.

7. The method of claim 1 wherein the attached oligonucleotides are covalently attached at their 5' terminus, and the proximal end of the promoter is between 12 and 50 nucleotides from the 5' terminus of each of the attached oligonucleotides.

8. The method of claim 1 wherein the sample nucleic acids comprise RNA molecules.

9. The method of claim 1 wherein the sample nucleic acids comprise DNA molecules.

10. The method of claim 2 wherein the constructing comprises extending the attached oligonucleotide using an RNA-directed DNA polymerase to produce an extended stranded and synthesizing a DNA strand complementary to the extended strand to produce complementary strands, wherein the attached and complementary strands anneal, thereby providing the template nucleic acids.

11. The method of claim 1 further comprising joining an adaptor that comprises a tag sequence to the double-stranded template.

12. The method of claim 11 wherein the adaptor comprises double-stranded DNA.

13. The method of claim 12 wherein the adaptor comprises a promoter sequence.

14. The method of claim 1 wherein at least some of the attached oligonucleotides comprise a spacer region of low complexity or medium complexity.

15. The method of claim 14 wherein the attached oligonucleotides further comprise a spacer region having a sequence absent from a sample of relevance.

16. The method of claim 1 wherein the distance is sufficient to enable at least twice the yield of replicate RNAs as obtained using a distance of less than 2 nm between the proximal end of the promoter sequence and the insoluble support.

17. A method of producing RNA replicates of sample nucleic acids, the method comprising:

providing an insoluble support comprising attached template nucleic acids, wherein (i) each attached template nucleic acids comprise a promoter sequence and a target sequence, and (ii) the proximal end of the promoter sequence is spaced from the insoluble support by a predetermined distance wherein

(a) the predetermined distance is between 10 to 150 nm;

(b) the attached template nucleic acids comprise a biotin at its 5' terminus, are attached to the insoluble support by a biotin / biotin-binding protein interaction, and the proximal end of the promoter is between 5 and 30 nucleotides from the 5' terminus,

(c) the attached template nucleic acids are attached to the insoluble support by a polyethylene glycol linker which has between 8 and 16 units, or

(d) the attached template nucleic acids are covalently attached, and the proximal end of the promoter is between 12 and 50 nucleotides from the 5' terminus of each of the oligonucleotides; and

transcribing the template nucleic acids to produce RNA replicates of the sample nucleic acids.

18. The method of claim 17 wherein the template nucleic acids further comprise a second promoter positioned to transcribe a nucleic acid segment located between the first and second promoters, each configured to transcribe a strand of the nucleic acid segment such that both strands of the nucleic acid segment are transcribed, and the method comprises transcribing the template nucleic acid using the first and second promoters to produce RNA complementary to each strand, and recovering double-stranded RNA for the nucleic acid segment.

19. The method of claim 1 wherein the attached oligonucleotides are covalently attached.

20. The method of claim 1 wherein the attached oligonucleotides are non-covalently attached.

21. A method of archiving a sample of complex nucleic acids, the method comprising:

providing a first insoluble support having 5' attached oligonucleotide, wherein the attached oligonucleotide comprises a promoter sequence that is at least 4 nm from the insoluble support and a target annealing sequence comprising a poly-thymidine tract and a 3' terminal A, G, or C;

annealing a complex sample that comprises sample nucleic acids to the insoluble support; and

producing template nucleic acids immobilized on the insoluble support that each include at least a segment of the sample nucleic acids, the immobilized templates representing the composition of the sample nucleic acids;

transcribing the template nucleic acids from the insoluble support;

archiving the insoluble support; and

transcribing the template nucleic acids from the insoluble support.

22. An insoluble support comprising a plurality of attached oligonucleotides, wherein (a) the attached oligonucleotides comprise a prokaryotic promoter sequence and a target annealing sequence, wherein each target annealing sequence of the plurality comprises a poly-thymidine tract and a 3' terminal A, G, or C, (b) the target annealing sequence is 3' of the promoter, (c) the oligonucleotide has an extendable 3' terminus; and (d) the proximal end of the promoter sequence is spaced from the insoluble support by a distance greater than 10 nm.

23. The support of claim 22 wherein the oligonucleotides are less than 80 nucleotides in length.

24. The support of claim 22 wherein the support comprises a planar glass slide.

25. The support of claim 22 wherein the attached oligonucleotides each comprise a attachment ligand 5' of the promoter, are attached to the insoluble support by a protein-ligand interaction that binds the attachment ligand of the oligonucleotide to a protein on the support, and the proximal end of the promoter is between 5 and 30 nucleotides from the 5' terminus.

26. The support of claim 25 wherein the attachment ligand is biotin.

27. The support of claim 26 wherein biotin moiety is attached to the 5' terminus of the attached oligonucleotide.

28. The support of claim 22 wherein the proximal end of the promoter is between 6 and 18 nucleotides from the 5' terminus.

29. The support of claim 22 wherein the attached oligonucleotides are covalently attached at an attachment site, and the proximal end of the promoter is between 12 and 50 nucleotides from the attachment site of each of the attached oligonucleotides.

30. The support of claim 22 wherein the attached oligonucleotides are covalently attached at their 5' terminus, and the proximal end of the promoter is between 12 and 50 nucleotides from the 5' terminus of each of the attached oligonucleotides.

31. An insoluble support comprising attached template nucleic acids,

wherein (a) each attached template nucleic acids comprise a prokaryotic promoter sequence, a target annealing sequence, and a ligand, wherein each target annealing sequence of the plurality comprises a poly-thymidine tract and has a 3' A, G, or C,

(b) for each template nucleic acid, the promoter is located between the target sequence and ligand,

(c) the template nucleic acids can be transcribed to produce RNA copies of each respective target sequence,

(d) the ligand is bound to a ligand-binding protein immobilized on the support, and

(e) the proximal end of the promoter sequence is spaced from the ligand between 5 and 30 nucleotides.

32. The support of claim 31 wherein the ligand is biotin.